

TO: NoName Group
 RE: Operational and Structural Tools for Improving Water Quality
 FR: Bruce Herbold
 DATE: October 2, 1998

The following is offered in a pure spirit of brainstorming, nothing included should be construed as supported by myself, EPA, or DEFT. As you are well aware, I have been arguing for the NoName Group to address the issue of water quality improvements through operational and structural actions for Stage 1. I believe this is a major gap in the CalFed effort and I ask your indulgence if I go overboard here, where I see us finally accepting the task. Some of these actions might only be pursuable as planning efforts in the first stage.

This list includes some of the proposed actions by DEFT and NoName that might have water quality impacts, as well as a number of new actions that would solely address water quality improvements. For actions already proposed I am trying to start a list of the relevant WQ questions. For new actions to enhance water quality I simply describe the actions.

Delta water quality enhancement actions and possible impacts of proposed actions:

IA Hood diversion — If this diversion is operated only at times when the cross channel gates are closed will 2000 cfs be adequate to protect in-delta water quality needs? At the different diversion rates and outfalls of this diversion will water quality impacts be different? If it is operated at other times of year will the improvements to water quality be seen over a broader area? Under any conditions would this structure improve export water quality?

IB Clifton Court Forebay change in ops with new screens — Replacement of the radial gates with a 6000 cfs screen backed up by a low head pump to ensure constant approach velocities of .2 fps is likely to affect stage and quality of south delta water over the tidal cycle. What effects are likely?

When exports exceed the permitted approach velocity for this screen, what are the WQ and stage impacts in the south delta of using the radial gates vs overdriving the screens?

IC VAMP expansion — expansion of export restrictions and/or flow augmentations to protect a larger percentage of outmigrating salmon would affect WQ and stage in the south delta as well as later in the year (under some implementation scenarios). Are there NoName Group tools that would reduce adverse impacts of these actions on water quality? If recycled water from San Luis was used to augment San Joaquin flow would that affect delta WQ?

ID Alex's recycling proposal — WQ impacts of this proposal could be large and diverse. Issues of the relative importance of the loading vs concentration of various WQ parameters in different parts of the San Joaquin River would be of interest to all CalFed parties.

Delivered water quality enhancement actions:

II San Luis operations:

A. Shifting of exports to times of high flow — Present operation scenarios begin filling San Luis Reservoir before the onset of fall rains. This operation ensures the presence of low quality water in San Luis. X2 represents the upstream limit of saltwater intrusion, and the daily tidal cycles will bring bromide laden waters upstream about 5 km from the 14 day average location of X2. Thus, a simple operational and modeling parameter to improve delivered WQ would be to refrain from exporting water to storage until X2 is west of Collinsville. This restriction would also have obvious biological benefits for species that live in the low salinity zone and outmigrating spring-run yearlings.

Deferring filling until flows are higher, under present operating criteria, would increase the risk of not filling San Luis. Most of the tools recommended for further analysis in the NoName Report will tend to increase the likelihood of filling San Luis, thereby reducing risk. A combination of limiting pumping to times of higher outflow, with the tools already described, could be balanced to reduce risk and improve WQ, while protecting fish from the impacts of pumping at times of low flow.

B. Circumventing San Luis for MWD deliveries — Mixing water exported from the delta at times of good water quality with water in San Luis that has poor water quality is an unnecessary degradation of urban source water. By reoperating storage to deliver good WQ direct to urban users, without holding it in San Luis first, WQ could be substantially improved.

C. Dumping bad water in wetter years — Water that is exported at times of poor delta water quality could be released into the San Joaquin River if delta water quality improves. This is a variation on Alex's recycling proposal but with a view to augmenting fish flows with water that might contain bromides so that there is room available to store water without bromides. Energy costs of pumping and releasing water might be offset by reduced treatment costs.

III Los Vaqueros

The water quality benefits of storing drinking water in a separate facility south of the delta have been widely recognized. Enlargement of Los Vaqueros has already been given substantial planning effort but I am unaware of analyses that quantify the WQ benefits that might accrue to users other than CCWD. The planning effort has identified environmental impacts that are probably only solvable through the kind of ESA consultation that CalFed is already using.

IV Delta Wetlands

Delta Wetlands is the most advanced example of in-delta storage. Urban waterusers have voiced concerns about TOC problems with water from a flooded, unlined island. However, the proposed filling schedule for the projects ensures that there is little likelihood of bromides in the stored water. If this water can be kept isolated from bromide-contaminated waters in San Luis

Reservoir, substantial improvements in reliability and WQ for urban users might be possible.

V Millerton and Pine Flat Water Transfers for Water Quality

Pine Flat and Millerton reservoirs contain water of exceptional quality beyond any reliable level from the lower Sacramento River. They are connected to the State and Federal water supply systems via the San Joaquin river channel and the Cross Valley Canal. The proposed Mid Valley Canal and Arvin Edison projects could provide further water management connections.

This water is free of bromide contamination and usually has negligible amounts of TOC. The quality of water from these sources is such that when used for dilution of water from other sources, a lower volume might be required.

To qualify as a part of a CalFed program, any use of these facilities to provide higher water quality for drinking water uses would have to have no significant redirected impacts on local agriculture.

Court actions are pending that are likely to reduce the yield of Millerton Reservoir as a step toward restoring riverine health. Changes in the point of use of this water will not alter future environmental responsibilities, which should be considered in calculations of future yield. Increased flows on the San Joaquin could be used to meet a variety of environmental goals described by ERPP and DEFT, in addition to riverine conditions. It would be best to negotiate a total package of environmental restoration needs of the San Joaquin and the delta, with water quality protection to municipal users, and protection of supplies to local agriculture. CalFed is probably a good forum to address such a bundle of actions.

A. Flood control options — When water is released from Friant into the San Joaquin River channel to accommodate flood control needs, some water could be diverted into the cross valley canal and delivered into storage in the MWD service area, Eastside Reservoir, groundwater basins, etc. This water should reduce the quantity of water MWD required from the delta later in the year.

B. Dry year options — When delta water quality is seriously degraded due to very low inflows, options might be exercised to purchase water and transport it for delivery to MWD. If these options targeted rare hydrological conditions, than third party impacts might be no worse than found in normal agricultural operations.

If the options targeted more frequent hydrodynamic conditions, the exercise of the options could be conditioned upon providing an equivalent volume of water from the delta to agriculture

C. Permanent trades — development of a Mid Valley Canal or other physical facility to deliver delta water to the Friant Water Users could enable frequent trading of high quality drinking water in exchange for monetary considerations and guaranteed delivery of suitable water for agricultural uses. Permanent trades could also be facilitated through improved water use efficiency or changes in cropping patterns.

D. Arvin Edison in lieu uses — MWD contract water from the delta could be stored in ground water basins for use by local users to enable the delivery of Millerton and Pine Flat water at other times to MWD.